

What is claimed:

1. A multimedia mobile communication system for recovering an EV-DO system from hand-off fail, the
5 multimedia mobile communication system comprising:

a hybrid access terminal making communication with the EV-DO system and a 1X system in order to transmit/receive voice signals or data, transmitting a route update signal to the EV-DO system while a multimedia service is being
10 transmitted thereto from the EV-DO system, and performing a hand-off by transmitting a hand-off response signal to the EV-DO system when a hand-off signal is transmitted thereto from the EV-DO system;

a 1X for transmitting/receiving a voice signal or data
15 to/from the hybrid access terminal;

a 1X controller for controlling a transmission service of the 1X transceiver;

a mobile switching center for providing a communication access route of the 1X system with respect to
20 a communication call from the hybrid access terminal by switching the communication access route;

an EV-DO access network transceiver subsystem for transmitting/receiving packet data to/from the hybrid access terminal;

25 an EV-DO access network controller controlling a packet data transmission service of the EV-DO access network transceiver subsystem, receiving the route update signal

from the hybrid access terminal while the multimedia service is being transmitted to the hybrid access terminal from the EV-DO access network transceiver subsystem, transmitting a traffic channel assignment signal to the hybrid access terminal in response to the route update signal, and re-transmitting the traffic channel assignment signal to the hybrid access terminal if a response signal(L2ACK) is not transmitted thereto from the hybrid access terminal, thereby performing the hand-off; and

a packet data serving node connected to the EV-DO access network controller so as to transmit/receive the packet data to/from the EV-DO system.

2. The multimedia mobile communication system as claimed in claim 1, wherein the hand-off signal transmitted to the hybrid access terminal from the EV-DO system includes a traffic channel assignment signal having a sequence number of a neighbor base station and an acknowledge signal for a reverse traffic channel.

3. The multimedia mobile communication system as claimed in claim 1, wherein, if the response signal (L2ACK) is not transmitted to the EV-DO system from the hybrid access terminal in traffic with the EV-DO system even though the EV-DO system has transmitted the traffic channel assignment signal to the hybrid access terminal, the EV-DO system again transmits the traffic assignment signal to the hybrid access terminal, and if the EV-DO system receives the

response signal (L2ACK) from the hybrid access terminal in response to the traffic channel assignment signal, the EV-DO system transmits an acknowledge signal for a reverse traffic channel to the hybrid access terminal, and then, re-transmitting the traffic channel assignment signal to the hybrid access terminal if a traffic channel completion signal is not transmitted to the EV-DO system from the hybrid access terminal, thereby performing the hand-off.

10 4. The multimedia mobile communication system as claimed in claim 1, wherein the hybrid access terminal receiving the multimedia data from the EV-DO system is periodically switched into an 1X mode in a predetermined period of time so as to check whether or not voice signals are received through the 1X system, and returns to an EV-DO mode.

20 5. The multimedia mobile communication system as claimed in claim 1, wherein, in a case of a forward link transmitting data from the EV-DO system to the hybrid access terminal, a TDMA (time division multiple access) method is utilized so as to transmit a great amount of data, and in a case of a reverse link transmitting data from the hybrid access terminal to the EV-DO system, a CDMA (code division multiple access) method is utilized for a plurality of subscribers.

25 6. A method for recovering an EV-DO system from hand-

off fail in a multimedia mobile communication system, the method comprising the steps of:

(a) performing a packet data transmission between the EV-DO system and a hybrid access terminal in traffic with the EV-DO system;

(b) transmitting a route update signal for a hand-off from the hybrid access terminal to the EV-DO system;

(c) transmitting a hand-off signal from the EV-DO system to the hybrid access terminal;

(d) determining whether or not a response signal for the hand-off signal is transmitted from the hybrid access terminal to the EV-DO system; and

(e) re-transmitting a traffic channel assignment signal from the EV-DO system to the hybrid access terminal if the response signal is not transmitted from the hybrid access terminal to the EV-DO system.

7. The method as claimed in claim 6, wherein step (a) includes the substeps of:

i) sequentially initializing a 1X mode for making communication with a 1X system and an EV-DO mode for making communication with the EV-DO system of the hybrid access terminal such that the hybrid access terminal stays in an idle state;

ii) performing a dual monitoring with respect to the 1X mode and the EV-DO mode by using the hybrid access terminal in a state that the hybrid access terminal stays in the idle state; and

iii) allowing the hybrid access terminal to enter into a traffic state of the EV-DO mode such that a connection and a session are formed between the hybrid access terminal and the EV-DO system, thereby enabling the hybrid access terminal to transmit/receive packet data to/from the EV-DO system.

8. The method as claimed in claim 6, wherein step (c) is carried out after the EV-DO system transmits a response signal with respect to the route update signal to the hybrid access terminal, and the hand-off signal includes a traffic channel assignment signal having a sequence number of a neighbor base station and an acknowledge signal for a reverse traffic channel.

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9. The method as claimed in claim 6, wherein, in step (d), the response signal includes a L2Ack signal transmitted from the hybrid access terminal to the EV-DO system in response to the traffic channel assignment signal and a traffic channel completion signal transmitted to the EV-DO system in response to an acknowledge signal for a reverse traffic channel after the L2Ack signal has been transmitted to the EV-DO system.

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10. The method as claimed in claim 6, wherein, in step (e), if the response signal (L2ACK) is not transmitted to the EV-DO system from the hybrid access terminal in traffic with the EV-DO system even though the EV-DO system has

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transmitted the traffic channel assignment signal to the hybrid access terminal, the EV-DO system again transmits the traffic assignment signal to the hybrid access terminal, and if the EV-DO system receives the response signal (L2ACK) from the hybrid access terminal in response to the traffic channel assignment signal, the EV-DO system transmits an acknowledge signal for a reverse traffic channel to the hybrid access terminal, and then, re-transmitting the traffic channel assignment signal to the hybrid access terminal if a traffic channel completion signal is not transmitted to the EV-DO system from the hybrid access terminal, thereby performing the hand-off.

11. The method as claimed in claim 6, wherein, in step (a), the hybrid access terminal receiving the multimedia data from the EV-DO system is periodically switched into an 1X mode in a predetermined period of time so as to check whether or not voice signals are received through the 1X system, and returns to an EV-DO mode.

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12. The method as claimed in claim 6, wherein, in step (a), a TDMA (time division multiple access) method is utilized in a case of a forward link transmitting data from the EV-DO system to the hybrid access terminal so as to transmit a great amount of data, and a CDMA (code division multiple access) method is utilized in a case of a reverse link transmitting data from the hybrid access terminal to the EV-DO system for a plurality of subscribers.